Before the
Federal Communications Commission
Washington, D.C. 20554

In the matter of	
	CC Docket No. 96-45
Federal-State Joint Board on Universal Service	

Comments on Joint Board Recommended Decision by Maine Public Utilities Commission,

Dated: December 18, 2002

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I. INTRODUCTION AND SUMMARY OF ARGUMENT

A. Introduction

On November 5, 2002, the commission released a Public Notice, DA 02-2976 ("Notice") seeking comment on the Recommended Decision of the Universal Service Joint Board issued in response to the order of remand from the United States Court of Appeals for the Tenth Circuit. The Maine Public Utilities Commission ("Maine") hereby respectfully submits initial comments on the questions raised in that notice. Maine also fully supports the comments of the Rural State Commissions filed on December 20, 2002, in this matter.

B. Summary of Argument

The Telecommunications Act of 1996 ("The Act") requires, as the Court of Appeals for the 10th Circuit has held, that the Commission develop and implement a system of nationwide support for high cost areas that will ensure that the rates for rural customers are "reasonably comparable" to the rates for customers in urban areas. The Joint Board has failed utterly in its task of recommending a system of Universal Service support that will satisfy the Act.

First, the Joint Board ignores the clear directive of the 10th Circuit to develop a coherent standard for "reasonably comparable." Similarly, the Joint Board's defense of the existing 135% "benchmark" fails to answer in any defensible way how the support produced by that benchmark produces the requisite comparability for rural and urban rates. Indeed, we show that the benchmark produces, at best, a difference between urban and rural that has already been found unlawful under the Act.

Finally, in order to assist the Commission in reaching a decision that meets the requirements of the Act, we have described a high cost support system that *can* achieve "reasonably comparable" rates.

II. THE JOINT BOARD'S RECOMMENDATION VIOLATES THE ACT AND THE TENTH CIRCUIT COURT'S INSTRUCTIONS

The Joint Board recommendation ignores the directives of the 10th circuit by failing to develop a defensible quantitative standard of "reasonably comparable." The Joint Board never specifically related rural to urban rate comparability as required by the 10th circuit and the Act. Because it lacks a coherent definition of "reasonably comparable," and thus presents no funding plan to achieve such comparability, the Joint Board's recommendation should be rejected.

A. The Act and the Tenth Circuit Decision

The Act specifies requirements upon which universal service support "shall" be based. Those requirements create "mandatory duties" for the FCC. The Joint Board and the FCC must base their universal service policies on the seven enumerated principles set forth in section 254(b) of the Telecommunications Act of 1996 ("the Act"). *See* 47 U.S.C. § 254(b). Two of those principles constitute requirements that directly affect the matter under consideration here:

1) Consumers in "rural, insular, and high cost areas" should have access to services that are "reasonably comparable" to those provided in urban areas at "reasonably comparable" rates. *See* 47 U.S.C. § 254(b)(3).

2) "There should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service." *See* 47 U.S.C. § 254(b)(5).

The other relevant provision of the Act is § 254(e), which provides in part that any federal support for universal service "should be explicit and sufficient to achieve the purposes of this section." *See*, 47 U.S.C. § 254(e).

The Tenth Circuit decision,[1] issued in July of 2001, remanded to the FCC its Ninth Order.[2] The court directed the FCC to establish an adequate legal and factual basis for the Ninth Order and, if necessary, to reconsider the primary mechanism promulgated in that Order. Among the significant problems with the Ninth Order found by the Court were:

1) The FCC did not define adequately key terms including "reasonably comparable" and "sufficient."

2) The FCC did not sufficiently justify setting the funding benchmark at 135 percent of the national average.

The Joint Board referral before us here has failed to solve either of these problems.

B. The Joint Board Recommendation Does Not Adequately Define Reasonable Comparability

The Joint Board has failed to quantitatively define "reasonably comparable" as required by the 10th Circuit. The Tenth Circuit was presented with the issue of "whether the FCC has endeavored to ensure that rates in rural and urban areas for universal services are reasonably comparable."[3] Finding that the terms were not adequately defined by the FCC, the court pointed to the specific assertion by Vermont and Montana that under the comparability

[1] *Qwest Corp. v. Federal Communications Commission,* 258 F.3d 1191 (10th Cir. 2001.) (hereafter "Qwest.")

[2] Ninth Report & Order and Eighteenth Order on Reconsideration, FCC 99-306, CC Docket No. 96-45 (Nov. 2, 1999) [hereinafter Ninth Order].

[3] *Qwest, supra.* at 1201, 1202.

standard implicitly adopted by the FCC some rural "rates" would be 70 or 80 percent higher than urban rates.[4]

The court rejected several of the FCC's earlier restatements of the reasonably comparable standard, including "a fair range of urban/rural rates both within a state's borders, and among states nationwide," "support levels . . . sufficient to prevent pressure from high costs and the development of competition from causing unreasonable increases in rates above current, affordable levels," and "some reasonable level above the national average forward-looking cost per line." The court stated that these verbal reformulations merely "substitute different standards," but do not define the statutory standard.[5] The court directed the FCC to adopt a standard that would help to "answer the questions that arise about reasonable comparability."

Instead of addressing the problem as required by the Court, and in an apparent effort to preserve the *status quo,* the Joint Board first developed a supplemental method based on rates that it proposed be used in conjunction with the existing cost based mechanism. However, the new "rates based" mechanism suggested by the Joint Board, like the existing cost-based method, does not contain any explanation of what method the FCC would use to determine whether the support provided under that method is sufficient to meet the "reasonably comparable" standard. Absent a definition and quantification of the term "reasonably comparable" as required by the Court, the Commission cannot find that any given level of support is sufficient. It does not matter whether costs or rates are used to determine support. What matters is that the level of support is sufficient to meet a clearly articulated and defined standard. The Joint Board has failed to provide that standard.

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[4] *Qwest, supra.* at 1201. The court was incorrect in this small matter. In reality, Vermont and Montana had asserted that rural *costs* after support would be 70-80percent higher than urban *costs*.

[5] *Qwest, supra.* at 1201.

1. Cost-Based Support

The Recommended Decision explained in detail why support should be based on costs, not rates.[6] While it continues to support the cost-based status quo, the Joint Board's recommended decision clarifies nothing about the specifics of cost-based support as required by the Court. It has not determined how to identify "urban" areas, so that an urban cost can be calculated.[7] It has not explained how to decide when rural and urban *costs* are reasonably comparable. Instead, the Joint Board recommended that the Commission retain the existing formula that compares high-cost areas to the *national* average cost. It made no effort to relate national average cost to urban cost.

The only statutory term that the Joint Board does define is "sufficient." It recommend that sufficiency be defined "as enough support to enable states to achieve reasonably comparable rates."[8] However, that definition is meaningless without also defining "reasonable comparable."

The Commission has the discretion to choose different ways to define the relationship between high cost areas and urban areas. The Commission could adopt a distribution mechanism that includes a benchmark that is a multiple of urban costs. The Commission could also use a benchmark that is related to average costs, but then articulate the appropriate relationship between average costs and urban costs. Ultimately, however, there must be some way to compare the costs of *rural high-cost areas* with *urban low-cost areas*. Either

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[6] Recommended Decision ¶ 18, 19 and 20.

[7] Oddly, the Joint Board *does* define high cost wire centers later, but only for purposes of the supplemental rate-based support system, discussed below. It recommends defining high cost as wire centers with 540 lines or less per square mile. ¶ 50. Maine and the Rural State Commissions fail to understand how this definition would affect anything in the supplemental support process described in ¶ 50 et.seq.

[8] Recommended decision ¶ 15.

option is acceptable, but both options require the quantification of "urban costs." After defining those terms, the Commission must examine the relationship between the net costs (after support) of high-cost states and the costs of low-cost urban areas and make findings regarding the sufficiency of support.

The Joint Board has not taken either option nor has it ever articulated a comparability percentage using either option. As a result, the Recommended Decision leaves intact nearly all the infirmities that the court identified within the Ninth Order. The Joint Board continues to fail to "answer the questions that arise about reasonable comparability" when support is based on costs.

2. Rates-Based Support

Perhaps in an attempt to bolster a cost-based method found to be inadequate by the Court, the Joint Board establishes an entirely new but poorly defined supplemental process for providing additional support.[9] Under this option, a state will apparently be able to apply for "additional targeted federal support." But first it must persuade the FCC that it has "already taken all actions reasonably possible and used all available state and federal resources to make basic service rates reasonably comparable, but that rates nevertheless fall above the [FCC's] benchmark." The state must also "submit rate data in support of its certification, based on a basic service rate template."[10]

This rate-based approach cannot cure the fundamental infirmities of the Joint Board's recommendation. This new supplemental support process also does not and cannot comply with the court's instruction regarding reasonable comparability because, once again, the

[9] Recommended decision ¶¶ 43 et.seq.

[10] Recommended Decision ¶ 50.

Commission has failed to articulate a "reasonably comparable" measurement standard. Moreover, the use of rates rather than average costs under the supplemental method distorts the central purpose of federal high cost support, namely to ensure that states with high average costs receive adequate support. A state could have very high rates in some areas and yet have low average costs. Those states do not need federal support to keep rates comparable. The failure to recognize and differentiate been intrastate rate differences and average interstate differences fails to separate those states that can solve their own comparability problems and those that need funds from outside the state. Accordingly, any supplemental system, like the primary system, must support those states with high average costs.

C. The Joint Board Has Failed to Justify Continuing to Use The 135 Percent Benchmark

The Tenth Circuit found that the Commission inadequately explained how its 135 percent benchmark helps achieve the goal of reasonable comparability or sufficiency. The Court specifically noted that the FCC "substituted a comparison of national and statewide averages for the statutory comparison of urban and rural rates."

The Court remanded the Commission's *Ninth Report and Order*. That order originally provided four justifications in support of the 135 percent benchmark: (1) It "falls within the range recommended by the Joint Board;" (2) such a level is "consistent with the precedent of the existing support mechanism," which uses a range of 115-160 percent; (3) that level is "near the midpoint" of the current range; and (4) it is a "reasonable compromise of commenters' proposals." The Court found these justifications insufficient to support the benchmark, and it emphasized the importance of the FCC using its expertise to set a proper benchmark. It stated that the FCC:

> is not a mediator whose job is to pick the 'midpoint' of a range or to come to a 'reasonable compromise' among competing positions. As an expert agency, its job is to make rational and informed decisions on the record before it in order to achieve the principles set by Congress. Merely identifying some range and then picking a compromise figure is not rational decision-making.[11]

The court recognized that the FCC may have to select a point from a "narrow range," but it noted that range needs to be better identified and based on record data and that the range presented in the ninth order was too wide.[12] In summary, the court found that the FCC had not shown that its choice was "informed and rational."[13]

The Joint Board's Recommended Decision does not, in any way, solve this problem. It does not carry out the Court's specific instructions regarding defining key terms. The Joint Board instead offers three after-the-fact justifications for the 135 percent benchmark. Even if those justifications were convincing, and, as shown below, they are not, they still do not address or define the issues defined by the court. The Joint Board never collected or reported data concerning urban costs.[14] Therefore, it had no empirical data from which it could derive a suitable benchmark from scratch, or even plausibly rationalize the 135 percent benchmark after the fact. As a result, there remains no factual basis upon which to conclude that the existing 135 percent benchmark provides sufficient support to allow states to set reasonably comparable rates.

The Joint Board provides three new justifications for retaining the existing 135 percent benchmark: (1) comparable rates and the General Accounting Office study; (2) a cluster analysis study; and (3) standard deviation analysis. Each of these justifications has fundamental

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[11] *Id.* at 1202.

[12] *Id.*

[13] *Id.*

[14] *Id.* at 1203.

flaws, and none of them support the majority's conclusion that the 135 percent benchmark should be retained.

1. Costs, Comparable Rates and the General Accounting Office Study

The Joint Board relied upon data concerning local exchange rates to justify the existing benchmark for cost-based support. The fundamental problem in using only local rate data to justify the sufficiency of a cost-based system is that local rates constitute only a portion of the costs imposed on customers. States as a matter of state rate design policy could set local rates at a low level and impose very high access charges or have very high intrastate toll rates. That state's rates may not comparable to the rates in urban areas regardless of the relative level of local exchange rates. Even if this problem could be overcome, however, the tests employed by the Joint Board are not those required by the 10th Circuit.

The court held that once the Commission had established a cost-based support system it must relate the elements of that system to the statutory terms "reasonable comparability" and "sufficiency." The Commission's failure to do this is still the central problem in this remand proceeding, and one that has not been solved by the Joint Board. Without defining what is meant by those key terms, any rate comparison is an irrelevant and useless exercise.

Two rate studies were used by the Joint Board to try to support its conclusions regarding comparability. The first was a proported finding in an earlier order. The second was a General Accounting Office study.

a. The Previous Finding of Comparability

In support of its decision to maintain the 135 percent benchmark, the Joint Board asserts that the Seventh Report and Order had found that rates at that time were reasonably comparable.[15] However, an examination of that report reveals no such finding.

The *Seventh Report and Order* was issued in May of 1999[16] following the Joint Board's *Second Recommended Decision*, which had been issued in 1998.[17] The *Seventh Report and Order* made some broad decisions about the structure of the federal support program, but it was an interim order, and it sought comment on a variety of detailed "methodological issues." The *Seventh Report and Order* did indeed find that "current rate levels are affordable."[18] But nowhere in the Seventh Report and Order is there a finding that rates were reasonably comparable. Moreover, nowhere in the Seventh Report and Order, or in any other prior Joint Board product, can one find that the Joint Board has collected any empirical data whatsoever on how rates vary across the country. Therefore neither the Joint Board or the Commission had the data to make the kind of finding described here.

b. The GAO Study

In concluding that rates are already reasonably comparable, the Joint Board also relied on a study made by the General Accounting Office ("GAO"). As reported by the Joint Board, the study shows that "six years after passage of the Act the national averages of rural, suburban and urban rates for residential customers diverge by less than two

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[15] Recommended Decision ¶ 34 and footnote 83.

[16] *Federal-State Joint Board on Universal Service*, Seventh Report and Order, 14 FCC Rcd 8078 (1999) (hereafter "*Seventh Report and Order").*

[17] *Federal-State Joint Board on Universal Service*, Second Recommended Decision, 13 FCC Rcd 24744 (1998)

[18] *Seventh Report and Order*, ¶¶ 30, 38.

percent." While the GAO report does find not much difference in *average* urban and rural rates, that assertion is without probative value here for several reasons.

The most fundamental problem with the Recommended Decision's use of the GAO study is that its conclusion is irrelevant. The Joint Board has relied on the small difference between national average rates for urban areas and national average rates for rural areas to support its comparability findings. Assuming for the sake of argument that rate patterns can be used to justify sufficiency without a defined comparability benchmark, national averages have nothing to do with sufficiency of support. The sufficiency problem does not concern the average, but the differences between rates in different areas. The question must be whether the rates in *any state* are so high as to be above a level of reasonable comparability with national urban rates. It is as though the Joint Board has found one person freezing in a snowbank and a second person sweating in a sauna and concluded that, on average, both are comfortable.

The second problem with the GAO study is that it includes a larger sample of carriers than those under review here. The GAO surveyed areas served by both rural telephone companies and areas served by nonrural telephone companies. Therefore, the GAO's conclusions might, at the most, apply to the country as a whole. But the Commission's consideration here only concerns the rates of nonrural companies. If rural customers served by nonrural companies have high rates, and rural customers served by rural companies have low rates, then including the rural data could lead to the conclusion that averaged rural rates are comparable to urban rates even if the rural rates of non-rural companies are very high. Nothing in the GAO report or the Joint Board's Recommended Decision indicates that this possibility was examined.

A third problem with the GAO study is that it does not include business exchange rates . The reported GAO conclusion about the similarity of rates applies only to residential rates. But section 254 speaks about rates generally, not just residential rates. Even if residential rates in urban and rural areas are equal, the same may not be true of business rates. The Joint Board did not explain how the rates of business customers vary from urban to rural areas, nor why it overlooked these customers.

Even though the Joint Board had the detailed GAO data before it, it failed to notice that large rate differences exist from state to state. Verizon submitted a state-by-state analysis of the GAO data and has filed its findings in this proceeding.[19] Table 1, below, shows a selection from Verizon's filing, consisting of six low-rate states and six high-rate states.

Table 1

State Average Residential Rates								
Selected Low-Rate States					Selected High-Rate States			
State	Central City	Non-MSA	Suburb		State	Central City	Non-MSA	Suburb
Florida	$10.70	$9.26	$9.80		Maine	$16.91	$16.42	$16.48
Illinois	11.84	15.25	18.18		Montana	16.73	16.73	16.73
Missouri	10.06	9.91	10.06		Nebraska	17.83	17.72	17.50
Nevada	9.90	10.53	9.90		N. Dakota	17.69	16.60	17.69
New Jersey	7.94		7.70		Vermont	24.55	24.77	24.55
Texas	9.51	11.40	9.75		Wyoming	23.10	37.55	23.10

Among these selected low-rate states, not one has central city residential rates above $12 per month. But among the high-rate states, not one has non-MSA rates below $16. Vermont's rate is above $24, and Wyoming's rate is $37.55. The Joint Board does not account for these

[19] Letter from W. Scott Randolph, Director – Regulatory Affairs for Verizon Communications, to Marlene H. Dortch, Federal Communications Commission, dated June 26, 2002, CC Docket 96-45, (Verizon June 26 ex parte), Attachment 1.

important facts shown in the GAO study, which undermine the Joint Board's conclusion that the GAO study shows current rate comparability.

The GAO report also contains several methodological problems that undermine the usefulness of its conclusions. The sample size used in the study was too small to be statistically valid. Secondly, the GAO overlooks some kinds of local exchange charges that must be paid by all end users in some states but not all states. Third, the study's unadjusted rate data ignores the fact that local rates in some places buy more services and broader local calling scope than in others. It also ignored, as noted above, the fact that some high-cost states have accepted high access and toll rates in order to keep local exchange rates moderate. Fourth, in areas where more than one local calling area is offered, the GAO did not even pick consistent rates. For example, in Michigan the study reported the local rate as $49 per month, but a footnote shows that the most common rate is $12.20. For all these reasons, the GAO study provides no support whatever for the Joint Board's conclusion that the "reasonably comparable" standard has already been achieved.

2. Cluster Analysis

The Joint Board also stated that the 135 percent benchmark was "empirically supported by cluster analysis." Cluster analysis, it explains, is "an analytical technique that organizes information around variables so that relatively homogeneous groups, or clusters, can be identified." The Joint Board has identified some states with similar cost characteristics. It has, for example, noted that Kentucky, Maine, Alabama, Vermont, Montana, West Virginia and Wyoming, when placed in cost order, do not have significant cost gaps from

one state to another.[20] The Joint Board then concludes that cluster analysis supports the current 135 percent benchmark because "cluster analysis identifies a high-cost, rural cluster of states that matches the group of states currently receiving support under the non-rural high-cost support mechanism."

The problem with cluster analysis is that the pattern of costs among the states is irrelevant to the sufficiency of support provided to those states. The statute does not direct the FCC to provide support to the states that happen to cluster at the high end of the cost distribution. Rather, it directs the FCC to provide sufficient support so that rates in high cost areas may be reasonably comparable to those in urban areas. The two standards are not the same. Therefore, the Joint Board's analysis cannot satisfy the Act's requirements.

At most, the cluster analysis shows that the group of states receiving support in 2002 (except for Mississippi) have similar cost characteristics. The fact that states receiving support at the 135% benchmark are clustered together is a function of the fact that if cost characteristics are similar, support should be similar. Clustering does not say anything about whether the support received by *any* state was sufficient to achieve reasonably comparable rates. Nor can it show that comparatively high-cost states that did not receive support can achieve reasonably comparable rates. Again, that finding cannot be made unless "reasonably comparable" is defined and an urban cost benchmark is set.

Supporters of the Joint Board recommendation might argue that *if* existing rates are actually comparable, and *if* cluster analysis shows that the "right" states are getting support, then the *status quo* satisfies the Act's requirement. The argument fails, however, because *neither* premise has been shown to be true. The GAO study says *nothing* about the rate

[20] Recommended Decision ¶ 37.

burden as a whole of any particular state relative to any other state (or any rural area to any urban area), and the cluster analysis merely illuminates the obvious – that any system of support for high cost areas is more likely to give support to states with relatively higher costs. This is not the reasoned analysis and empirical support demanded by the Court.

3. Standard Deviation Analysis

The Joint Board's third argument in support of the 135 percent benchmark was a "standard deviation analysis." The insoluble barrier to the Joint Board's use of the standard deviation analysis as support for its recommendation is that such analyses are utterly irrelevant to comparability. Like cluster analysis, standard deviation analysis relies on the patterns of costs among the states. Here that pattern is expressed in statistical terms of mean and standard deviations, not as gaps between state costs in a ranked list as with the cluster analysis. But the fundamental problem is the same. The pattern of costs among the states is irrelevant to the sufficiency of support provided to those states. Learning whether a state has costs that are higher or lower than plus two standard deviations says nothing about whether its costs are reasonably comparable to urban costs.

The 135 percent benchmark and the two standard deviation benchmark are equally arbitrary. There is no reason to believe, without defining what is meant by "reasonably comparable," that a state with costs that are less than 135 percent of the national average has costs that are reasonably comparable to urban areas. This problem is not solved by making the new assumption that states with costs less than plus two standard deviations have costs that are reasonably comparable to urban areas. As further explained in the attached affidavit from Dr. Gillis, a benchmark set at two standard deviations above the mean is no less arbitrary or more

relevant to the statutorily mandated task than a percentage benchmark that is not based on a articulated standard of "reasonable comparability."

Once again, the Joint Board is suggesting a new and different formulation of the statutory language. The Court has already rejected several other reformulations. Here the Joint Board would substitute a new test that only "true outliers" should receive support. This alters the standard in section 254. The Act does not direct the Commission to provide support to outliers, but to states that have costs that are not "reasonably comparable" to urban areas. Once again, rather than defining a key statutory term as required by the Act and the Court, the Joint Board has chosen to create a new standard that differs from the statute.[21]

4. The Joint Board and the "Urban Benchmark"

In recommending continuation of the 135 percent benchmark, the Joint Board also explicitly rejected the concept of establishing an "urban benchmark." That is, it rejected the idea that the support benchmark should be stated as a multiple of the national average *urban* cost. The Joint Board acknowledged that the record shows that a percentage benchmark set at 135 percent of national average is the same as a benchmark set at 165 percent of the national urban average. This, it acknowledges, is perilously close to the 170 percent that the Tenth Circuit criticized. However, the Joint Board nevertheless supports continuation of this status quo. The Joint Board justifies its rejection of the use of an urban benchmark on the fact that it believes that if it converts the 135% national benchmark to an urban benchmark, the resulting benchmark of 165% is higher then that which would be plausible under the Act. The Joint Board, however fails to perceive the other implication of this conversion and of its

[21] The Rural State Commission comments demonstrate the many methodological flaws in the Joint Board's use of standard deviation analysis. Maine will not repeat them here.

implausibility finding: that the 135% national comparability standard is much too high if it results in an urban benchmark of 165%. The circularity of the Joint Board's reasoning is obvious. If anything, the reasons given by the Joint Board for rejecting the use of an "urban benchmark" demonstrate that the national benchmark defended by the Joint Board is *inadequate* to achieve reasonable comparability between rural and urban rates.

III. THE COMMISSION SHOULD FIND THAT SUPPORT SHOULD BE PROVIDED TO STATES WHOSE AVERAGE COSTS EXCEED 125 PERCENT OF AN URBAN COST BENCHMARK OF $ 17.89

Because the Joint Board has not shown the *status quo* to comply with the Act and the Court's order, and has likewise failed to offer a defensible substitute, Maine herein offers a proposal that will, albeit minimally, satisfy the Act. As shown below, the Commission should ensure support for any state whose costs exceed 125% of an urban benchmark of $17.89.

A. The Proper Urban Benchmark is $17.89

The Joint Board did not perform any analysis to estimate urban cost. Maine describes below several approaches to estimating this number. All are based on cost data from the latest output of the Commission's own cost model. Based on our analysis of the results from all these approaches, our best estimate is that the forward-looking cost of urban areas in the country is approximately $17.89 per line per month. We describe our basis for this conclusion below.

1. Urban Study Areas -- $16.03

A simply way to estimate urban cost is to use study areas that are largely or purely urban. Unfortunately, only one nonrural study area, Washington D.C., qualifies as entirely urban. All other nonrural study areas include substantial suburban and, more important,

rural areas. The forward-looking cost of providing service in Washington D.C., according to the cost model, is $16.03.[22]

Maine and the Rural State Commissions considered including some other study areas, but even some other obvious other candidates failed to qualify. For example, Rochester Telephone serves extensive rural areas south of the city of Rochester, almost to the Pennsylvania Border. Likewise, Cincinnati Bell includes some rural areas in Kentucky. Including these study areas in the sample would bias the estimate upwards by including costs of rural areas in the "urban" estimate. However, using Washington, D.C. as an urban proxy may understate urban cost because the District is the most urban part of the urban metropolitan area.

2. Wire Center Size -- $18.56

Another way to identify urban wire centers would be to select only those wire centers that serve large numbers of customers. This procedure is valid because in most suburban and rural areas the rapidly increasing length of longer loops makes the use of large switches uneconomic. For rural areas, the most economical method of providing service is with smaller switches and shorter loops. We considered that wire centers with more than 20,000 lines are "urban." There are 2,222 such wire centers meeting this criterion, amounting to 20 percent of the 11,118 non-rural carrier's wire centers.

The average cost for all wire centers in the data set is $21.92. We excluded all wire centers of less than 25,000 lines, and then recalculated the average cost of the remaining wire centers. The average weighted cost for the urban subset is $18.36.

This is probably a high estimate of urban cost. Our wire center subset likely includes some suburban wire centers that have a large area and long loop sizes. It also

[22] USAC Quarterly report for 2002 Q4 table HC12.

probably includes some geographically large urban wire centers that serve both an urban core and sizeable surrounding high-cost rural areas.[23] Both of these effects tend to increase average cost under this method.

3. Density Zone Analysis -- $17.83

Still another way to estimate national average urban cost is to take the average cost of wire centers with a specific density. For other purposes, the Joint Board has recommended a working definition of "urban" as wire centers with 540 lines or more per square mile.[24] This undoubtedly includes many suburban and rural areas, because it considers 66 percent of all access lines to be "urban."[25] Nevertheless, we have used this same threshold for our calculation. As shown in Table 2, the resulting estimate of urban cost is $17.83 per line per month.

Table 2

Density Zone	Number of Wire Centers	Number of Access Lines	Avg. Monthly Cost per Line	Monthly Cost
540 - 2550	1,859	62,995,615	$18.91	$1,191,247,079.65
2550 - 5000	481	24,086,299	$17.08	$411,393,986.92
5000 - 10000	204	12,559,720	$16.44	$206,481,796.80
>10000	114	8,811,891	$14.20	$125,128,852.20
Total		108,453,525		$1,934,251,715.57
Average			$17.83	

4. Census Area Overlap Method -- $17.89

Maine (together with the Rural State Commissions) has developed an additional method for estimating urban cost. This method has the unique advantage of using a definition of "urban" that is used by the United States Bureau of the Census. Also, because it is

[23] Bangor, Maine and Billings, Montana are examples.

[24] Recommended Decision ¶ 50.

[25] 108 million of the total of 163 million lines served are characterized as urban.

based on the characteristics of all wire centers operated by nonrural carriers, it is the most global of all our estimates and therefore should be the most reliable.

Because costs are available only for wire centers, we developed a list of wire centers that contain areas considered urban by the United States Bureau of the Census. We compared wire center boundaries [26] with recently published Census data defining urban areas. [27] Using standard "geographic information system" software we determined for each wire center the percentage of its area that the Census Bureau has characterized as "urban." We then excluded the wire center if its area is not at least 50 percent urban. In this way we developed a national listing of wire centers that, geographically, are primarily urban. Finally, we looked up the forward-looking cost of each of these wire centers, according to the model results for 2002. The weighted average cost of those urban wire centers is $17.89. The area overlap methodology employees a definition of what is urban that is broadest in scope.

5. Summary

Table 3 summarizes all of these efforts to estimate national average urban cost under the Commission's model.

Table 3

Method	Urban Cost Estimate
Urban Study Area	$16.03
Wire Center Size @ 20,000	$18.56
Density Zone @ 540 lpsm	$17.83
Area Overlap at 50 percent	$17.89

[26] We acquired from a commercial source a national database that shows the boundaries of all wire centers.

[27] According to the United States Bureau of the Census, urban areas include both "urbanized areas" and "urban clusters."

The methods produce a range from $16.03 to $18.56. Maine recommends that the Commission set urban cost at $17.89 per line per month. This is the figure derived using the area overlap methodology, which we believe best represents urban costs in a wide variety of urban areas. The other methods produce costs which "bracket" and lend support to our choice.

B. THE COMMISSION SHOULD ESTABLISH THE BENCHMARK AT 125 PERCENT OF NATIONAL AVERAGE URBAN COST

It is our view that comparable means nearly equal and that reasonably comparable is little different from comparable. The relevant authority and the other analysis set forth below shows that a 25% difference is the outer limit of being "reasonably comparable." Thus, the Act requires the Commission to establish a system to ensure that rural rates are never more than 125 percent of a suitably defined average urban rate.

When Congress required the Commission to ensure that rates in rural and high cost areas are "reasonably comparable" to those in urban areas, it did not precisely define the term. Nevertheless, the Commission's discretion to set the limits of comparability cannot be unlimited, and should be guided by the meaning given by courts and agencies in related contexts.

Some precedent is found in the field of natural gas regulation. Under Section 311 of the Natural Gas Policy Act, the Federal Energy Regulatory Commission (FERC) approves the transportation rates of intrastate natural gas pipelines only if they are "reasonably comparable" to the rates that would be allowed to an interstate pipeline. Over the years, the FERC has narrowly construed this standard. An intrastate rate may be "somewhat higher than some of the comparison rates, as long as it is lower than others."[28] Of course, where interstate rates are closely grouped, this allows only a small variation for intrastate rates. In other cases under

[28] *Producer's Gas Company*, 35 FERC Record, 63,042, Released May 12,. 1986.

Section 311, the FERC has adopted an even narrower construction, essentially requiring rates that are similar to those that would be set by an interstate pipeline.[29] One FERC commissioner even characterized the FERC policy as requiring "essentially equal" rates.[30] Thus in a situation similar to the present one – where rates set by a federal agency must be "reasonably comparable" to a standard – the FERC has allowed only small deviations, if any at all, from the base for comparison purposes.

"Reasonably comparable" has also been construed by courts. These cases also suggest that the Commission must take a narrow view of the permissible differences between urban and rural rates. One case suggested that a synonym for "reasonably comparable" is "roughly equivalent."[31] In the context of property taxation, where the value of property is sometimes defined by the sale prices of "reasonably comparable" properties, the parameters are sometimes very narrow as to what may be considered a "reasonably comparable" property.[32]

While it is difficult to define an outer limit for the comparability standard, some differences are surely outside that limit. For example, the Commission would certainly violate the Act with a comparability standard of 150 percent. It is implausible to suggest that a $20 price is "comparable" in any sense to a $30 price for the same service. Most consumers would not be indifferent to such a price difference. Indeed, if "comparability" has any meaning at all, these two prices are more "non-comparable" than they are "comparable;" they are more different than they are alike.

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[29] *Mustang Fuel Corp*, 31 FERC Record, 61,265, Released June 4, 1985.

[30] *See Delphi Gas Pipeline Corp.*, 43 FERC Record Page 61,024, concurring statement of Commissioner Trabandt.

[31] *Dartmouth Review v. Dartmouth College*, 889 F2d, 13,19 (1st Cir. 1989).

[32] See e.g., *Wisconsin v. City of Madison,* 178 Wis.2d 577 (1993)

What is "comparable" could also be evaluated by consumer behavior. Thus one possibility is to define a numerical standard for "reasonably comparable" by using actual consumer behavior given material price differences. The concept is that two rates are not "comparable" if a customer with a choice is not indifferent and considers the price difference materially different.

Using "customer indifference" as a guide to reasonable comparability is also consistent with the underlying purposes of the Act. Clearly the Act intends that *price* for telephone services for rural customers not create an impediment to living in rural areas when compared to urban areas. If prices are allowed to diverge between rural and urban areas to the point where that gap makes a difference to consumers, the purpose of the Act will be frustrated.

Rates for two telecommunications services of equal quality might be defined as "comparable" when the services are provided in an effectively competitive market, and when a price-conscious consumer who is actively shopping for a service and who has good information about price would be largely indifferent. Conversely, if rates are not comparable, a price-conscious and actively shopping consumer will nearly always choose the lower rate.

The "reasonably comparable" standard is less stringent than the "comparable" standard, and therefore it would allow a somewhat greater price difference. In the context of consumer behavior, this definitional difference could be translated into modified assumptions about the consumer behavior. Two services might be considered "reasonably comparable," in this sense, if a less active and less informed consumer would be indifferent. That is, rates for two telecommunications services of equal quality might be defined as "reasonably comparable" when the services are provided in an effectively competitive market, and when an average consumer who is not shopping for a service and who has information about price would be

largely indifferent. Conversely, if rates are not reasonably comparable, an average consumer with average knowledge would quite likely choose the carrier offering the lower rate.

If "reasonably comparable" is defined by consumer behavior, experience in other effectively competitive markets can provide additional evidence. Gasoline prices offer an analogy. The price variation within a single locality in Maine typically is less than 10%. Thus based on our observations of customer behavior, a 13 cent per gallon difference on a base of about $1.30 would cause many customers to seek out the lower price, even if it means discarding one's accustomed merchant. Thus, for gasoline, two prices that differ by more than 10 percent are not comparable.

In telecommunications, as with gasoline, rates may need to be within 10 percent of each other to be comparable. A larger difference would likely produce significant customer migration by customers with choice, even though they may not be actively shopping. A difference of 25% on a base of $1.30 would be over a 30¢ a gallon difference. A 30¢ a gallon difference will influence behavior for all but the most price indifferent customers. Therefore, we believe a 25% difference is the very most that prices can differ and still be "reasonably comparable."[33]

We thus recommend defining as "reasonably comparable" rural rates which are not more than 125% of a suitably defined national urban average. This means that if the rate or cost of serving an urban customer is $20.00, then no rural customer would have a rate cost (net of federal support) greater than $25.00.

The Commission should reject the Joint Board's recommendation and establish a new benchmark that meets the statutory test. That benchmark should be no higher than 125

[33] See Statement of Dr. William Gillis, point 15.

percent of the national average urban cost of $17.89 or about $22.36. This will ensure that no state will have net costs, after federal support, more than 25 percent higher than the costs characteristic in urban areas.

Respectfully submitted,

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Before the
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Washington, D.C. 20554

In the matter of Federal-State Joint Board on Universal Service	CC Docket No. 96-45

Statement of Dr. William Gillis

Now comes William Gillis and states as follows:

1. I hold a Ph.D degree in Agricultural Economics from the University of Wisconsin. I have over 20 years experience in public sector economics including in-depth work analyzing both existing and alternative federal universal service mechanisms. My work has included substantial emphasis in analyzing the assumptions and parameters of alternative universal service costing methodologies in the context Section 254 of the Telecommunications Act. My economic analysis and that conducted under my direction has been relied upon by both state and federal public decision makers in evaluating appropriate reforms to high cost universal service mechanisms.
2. I served as a Commissioner on the Washington Utilities and Transportation Commission from 1994 to 2000. I also served as Chairman of the Rural Task Force that reported to the Federal-State Joint Board on Universal Service.
3. I am familiar with the purposes of universal service support under Section 254 of the Telecommunications Act of 1996 and with the purposes of the programs that the Federal Communications Commission now operates under that statute.
4. I have reviewed the Recommended Decision of the Joint Board on Universal Service that is the subject of Public Notice, DA 02-2976.

5. The Joint Board recommended continuation of the existing system of support for nonrural carriers, including continuation of the existing benchmark for support that is set at 135 percent of national average cost, as determined by the Commission's forward-looking cost model.
6. The Joint Board offered several reasons to explain its conclusion that the 135 percent benchmark should be retained. One of those reasons was "standard deviation analysis." Under that analysis, the Joint Board concluded that the dollar value of the benchmark should be approximately equal to the sum of the mean forward-looking cost among nonrural carriers plus two standard deviations.
7. Standard deviation analysis is a tool used in statistical hypothesis testing. Hypothesis testing and standard deviation analysis are the right tools for certain types of problems, such as deciding whether the mean value of a sample is significantly different from the mean value of a population or whether two samples may derive from the same population. In instances where data are normally distributed, there is a definite relationship between the number of standard deviations between two means and a confidence level. For example, if a sample mean differs from the population mean by more than two standard deviations, then it is acceptable, to say that the means are statistically different, with a "confidence level" of 95% . This means that in a large number of cases where we conclude that there is a significant difference (and the "null hypothesis" is false), we would expect our conclusion to be correct 95 percent of the time and incorrect 5 percent of the time.
8. This kind of statistical inference is also in common use by regulatory agencies that must evaluate the relative quality of wholesale services provided by incumbent telephone companies. I note, for example, that the Commission has approved the 95 percent confidence interval in evaluating the sensitivity of Verizon's performance measures of when it is

providing wholesale services to its competitors.[34] This kind of analysis is also standard practice within the scientific and economic communities.

9. The issue presently before the Commission, however, is not a problem for which hypothesis testing and standard deviation analysis is appropriate. In applying standard deviation analysis via a 95 percent confidence interval, the Joint Board has inappropriately applied the science of statistical inference.

10. Under some circumstances standard deviation analysis may be appropriate, but a different confidence interval may be proper. In those cases, one should not use two standard deviations as the test criterion. The appropriate confidence interval depends upon the risks and benefits of false positive errors and false negative errors. For example, if a drug has severe side effects, the FDA might want to require a 99 percent confidence level of the drug's effectiveness before allowing it to reach the market. Conversely, if a diagnostic test is cheap, reliable and harmless, it may be appropriate to administer the test to a broad population even though there is only a 1 percent confidence level that a particular individual receiving the test is actually ill.

11. As I previously stated, the preceding analysis assumes that the Commission's forward-looking cost data are "normally distributed." I am not aware of any analysis by the Joint Board or the Commission supporting the proposition that the levels are normally distributed. Indeed, there exists credible analysis showing that the data are skewed to the right.[35]

12. In regulatory applications, I am familiar with a previous occasion where, under different circumstances, the Commission has deemed appropriate the use of 1.0 standard deviation, not

[34] Application by Verizon New England Inc. for Authorization To Provide In-Region InterLATA Services in Vermont, CC Docket No. 02-7, Order released April 17, 2002, footnote 267.

the 2.0 recommended here by the Joint Board.[36] It should not be surprising that in some applications 1.0 standard deviation is appropriate and in others 2.0 standard deviations is appropriate. Different circumstances call for different standards of confidence. But the Joint Board's analysis did not explain clearly why 2.0 standard deviations is the appropriate test here. The Commission should not assume that 2.0 standard deviations is an unvarying scientific norm. One, two and three standard deviations each has an associated confidence level, and each has been used by the scientific community.

13. Statisticians and other analysts also sometimes use standard deviation analysis for a different purpose, to reject measured but suspect raw data. Under this procedure, one may measure something but then discard data points that are more than two or three standard deviations from the mean. The underlying assumption is that the discarded data points probably reflect errors of unexplained origin. In this context analysts sometimes speak of "outlying data," or more simply of "outliers." This kind of analysis is standard practice in the scientific and economic communities. But once again, this scientific use of standard deviations has nothing in common with the problem here, deciding when rural costs are reasonably comparable to urban costs.

14. I am not aware of any other basis on which in the present context "standard deviation analysis" or the use of a point defined by two standard deviations above the mean of the cost population would have any statistical or scientific validity.

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[35] This analysis is included in the comments of the Montana and Vermont Commissions, to which I understand this statement will be attached.

[36] In analyzing the reasonableness of collocation costs, the FCC found in 1997 that 1.0 standard deviations provided sufficient confidence. *In the Matter of Local Exchange Carriers' Rates, Terms, and Conditions for Expanded Interconnection Through Physical Collocation for Special Access and Switched Transport*, CC Docket No. 93-162, Second Report and Order, released June 13, 1997 ¶ 125.

15. The Commission also must define when two costs are "reasonably comparable." This does not require a sophisticated intellectual endeavor involving either hypothesis testing or standard deviation analysis. Unless "reasonably comparable" is defined, any benchmark established is arbitrary. It does not make any difference whether that benchmark is expressed as a percentage or as a number of standard deviations from the mean. Both are equally arbitrary. One need only observe that customers often make rational choices based on rate comparisons. Modest price differences in similar products or services are observed to induce rational consumers to select the lower priced product. For example, consider the price sensitivity of a rational consumer in choosing among alternative suppliers of automobile gas. Any station that attempts, to sell gas at a price 35 percent above a neighboring gas station's price will soon go out of business. The Joint Board's Decision to presume 135 percent benchmark results in comparable costs is not consistent with real world observations of how rational consumers make choices. Consequently, statistical observed clustering of costs around the defined benchmark is not an appropriate use of inference to define comparable costs. Under many circumstances, consumers require a price difference smaller than 35 percent before they consider two prices to be reasonably comparable.

I hereby assert that the preceding statements and opinions are true and accurate. I offer these opinions understanding that one or more State Commissions may file them before the FCC in the above-captioned proceeding. I have not received any compensation in return for offering these opinions or for executing this statement.

December 18, 2002

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Before the
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In the matter of Federal-State Joint Board on Universal Service	CC Docket No. 96-45

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing comments will be mailed to the persons on the attached list.

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